Ubuntu High Availability
Packaging and Testing Efforts

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Ubuntu Linux Core Developer
Ubuntu Server Team
Intent of this presentation

0.1 Present myself and get to know upstream team

0.2 Show how we do things

0.3 Show how we *think* we might help AND get inputs
Who am I
2 – How do we do things?
2 – How do we do things?

Debian HA work and Ubuntu HA packages
Debian HA work and Ubuntu HA packages

- https://bugs.launchpad.net/~ubuntu-server-ha/+packagebugs
- https://launchpad.net/~ubuntu-server-ha/+archive/ubuntu/ubuntu-ha-devel
- https://salsa.debian.org/ha-team?sort=name_asc&page=1
PPAs mimic repositories (different arch builds)
PPAs mimic repositories (diff arches and builds)

- https://launchpad.net/~ubuntu-server-ha/+archive/ubuntu/ubuntu-ha-devel/+edit
- http://10.228.68.5:5240/MAAS/#/machines (d05 arm64 provisioning)
- http://10.245.71.3:5240/MAAS/ (ppc64el provisioning)

(3 last ones: internal links, showed during presentation only)
2 – How do we do things?

“-proposed”, autopkgtests, migrations and excuses
autopkgtests

- https://autopkgtest.ubuntu.com/packages/booth
- https://autopkgtest.ubuntu.com/packages/cluster-glue
- https://autopkgtest.ubuntu.com/packages/corosync
- https://autopkgtest.ubuntu.com/packages/corosync-qdevice
- https://autopkgtest.ubuntu.com/packages/crmsh
- https://autopkgtest.ubuntu.com/packages/sbd
- https://autopkgtest.ubuntu.com/packages/dlm
- https://autopkgtest.ubuntu.com/packages/drbd-utils
- https://autopkgtest.ubuntu.com/packages/fence-agents
- https://autopkgtest.ubuntu.com/packages/resource-agents
- https://autopkgtest.ubuntu.com/packages/keepalived
- https://autopkgtest.ubuntu.com/packages/kronosnet
- https://autopkgtest.ubuntu.com/packages/libqb
- https://autopkgtest.ubuntu.com/packages/pacemaker
- https://autopkgtest.ubuntu.com/packages/pcs
“-proposed” and “migrations”

- https://launchpad.net/ubuntu/focal/+queue
- https://launchpad.net/ubuntu/focal/+queue?queue_state=3&queue_text=pacemaker
- http://launchpadlibrarian.net/450049571/pacemaker_2.0.1-4ubuntu2_2.0.1-5ubuntu1.diff.gz
excuses

2 – How do we do things?

jenkins.canonical.com
jenkins.ubuntu.com
(internal access only)
jenkins.{ubuntu,canonical}.com

• https://git.launchpad.net/qa-regression-testing

• https://jenkins.ubuntu.com/server/view/virt/

• https://jenkins.ubuntu.com/server/view/virt/job/virt-ppc64-1-migrate-b/

• https://jenkins.ubuntu.com/server/view/virt/job/virt-amd64-1-migrate-x/

• https://jenkins.ubuntu.com/server/view/virt/job/virt-ppc64-2-cross-rel/
3 – How we might help...
autopkgtests and its infrastructure issues
autopkgtests issues regarding multiple instances

- Autopkgtests don’t allow complex setups like HA requires
- Multiple instances, shared storage, synchronized actions
- Depends on underlying environment (armhf currently as unpriv LXD only)
  - Aarch32: ARMv8 Aarch64 might not implement KVM Aarch32 support
  - LXD Aarch32 in an Aarch64 kernel (not optimal)
- https://git.launchpad.net/qa-regression-testing
jenkins.{ubuntu,canonical}.com
Just an example...

- https://jenkins.ubuntu.com/server/view/virt/
- https://jenkins.ubuntu.com/server/view/virt/job/virt-ppc64-1-migrate-b/
- https://jenkins.ubuntu.com/server/view/virt/job/virt-amd64-1-migrate-x/
- https://jenkins.ubuntu.com/server/view/virt/job/virt-ppc64-2-cross-rel/

(internal links, showed during presentation only)
Production data
(apport crash reports)
Production data (crash reports)

- Crashes sent through whoopsie and/or apport core dump integration
- BUGs opened in Launchpad with collected data
- https://errors.ubuntu.com/
Production data (crash reports)

- https://errors.ubuntu.com/?package=corosync&period=year

<table>
<thead>
<tr>
<th>Rank</th>
<th>Occurrences</th>
<th>Binary Package</th>
<th>First seen</th>
<th>Last seen</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>corosync</td>
<td></td>
<td></td>
<td>corosync (corosync) totemsrp.c → 1328 → memb_consensus_agreed → Assertion &quot;token_m... Create</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>corosync</td>
<td></td>
<td></td>
<td>corosync (corosync) cpg.c → 867 → downlist_master_choose → Assertion &quot;best != NULL&quot; Fail... Create</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>corosync</td>
<td></td>
<td></td>
<td>corosync (corosync) votequorum.c → 2012 → message_handler_req_exec_votequorum_no... Create</td>
</tr>
</tbody>
</table>

- https://errors.ubuntu.com/?package=keepalived&period=year

<table>
<thead>
<tr>
<th>Rank</th>
<th>Occurrences</th>
<th>Binary Package</th>
<th>First seen</th>
<th>Last seen</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>keepalived</td>
<td>Ubuntu 19.04</td>
<td>Ubuntu 20.04</td>
<td>keepalived (double free or corruption (fasttop)) Create</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>keepalived</td>
<td>Ubuntu 16.04</td>
<td>Ubuntu 16.04</td>
<td>keepalived (11) _GL___strtol_int... Create</td>
</tr>
</tbody>
</table>
3 – How we might help ...

Production data
(Sustaining Engineering)
Production data (Sustaining Engineering)

- Customer Production Environments without sensitive information
- Core Dump Analysis usually done in public bugs
- Mostly focused in LTS versions (better if they are synced with upstream releases)
- Obligation on solving and/or mitigating found issues:
  - If issues are solved upstream: backport to all supported releases
  - If issues are found even in upstream versions: work together with upstream
  - If issues are “impossible” to fix (due to SRU guidelines, for example)...
3 – How we might help ...

Production data
(JuJu Charm Dependencies)
Lots of JuJu Charms rely on HA packages for clustering

Ubuntu Open Stack HA services. Quick example:

$ juju bootstrap localhost

$ juju deploy percona-cluster -n3 --config min-cluster-size=3 --config innodb-buffer-pool-size=128M

$ juju deploy keystone

$ juju config percona-cluster vip=10.250.99.2

$ juju deploy hacluster

$ juju add-relation hacluster percona-cluster

$ juju add-relation percona-cluster keystone

$ juju kill-controller localhost-localhost -y -t1s
## Production data (JuJu Charm Dependencies)

<table>
<thead>
<tr>
<th>Model</th>
<th>Controller</th>
<th>Cloud/Region</th>
<th>Version</th>
<th>SLA</th>
<th>Timestamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>default</td>
<td>localhost-localhost</td>
<td>localhost/localhost</td>
<td>2.7.1</td>
<td>unsupported</td>
<td>14:08:13Z</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>App</th>
<th>Version</th>
<th>Status</th>
<th>Scale</th>
<th>Charm</th>
<th>Store</th>
<th>Rev</th>
<th>OS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>hacluster</td>
<td></td>
<td>active</td>
<td>3</td>
<td>hacluster</td>
<td>jujucharms</td>
<td>63</td>
<td>ubuntu</td>
<td></td>
</tr>
<tr>
<td>keystone</td>
<td>13.0.2</td>
<td>active</td>
<td>1</td>
<td>keystone</td>
<td>jujucharms</td>
<td>309</td>
<td>ubuntu</td>
<td></td>
</tr>
<tr>
<td>percona-cluster</td>
<td>5.7.20</td>
<td>active</td>
<td>3</td>
<td>percona-cluster</td>
<td>jujucharms</td>
<td>282</td>
<td>ubuntu</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Workload</th>
<th>Agent</th>
<th>Machine</th>
<th>Public address</th>
<th>Ports</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>keystone/0*</td>
<td>active</td>
<td>idle</td>
<td>3</td>
<td>10.250.99.132</td>
<td>5000/tcp</td>
<td>Unit is ready</td>
</tr>
<tr>
<td>percona-cluster/0*</td>
<td>active</td>
<td>idle</td>
<td>0</td>
<td>10.250.99.224</td>
<td>3306/tcp</td>
<td>Unit is ready</td>
</tr>
<tr>
<td>hacluster/2</td>
<td>active</td>
<td>idle</td>
<td>1</td>
<td>10.250.99.224</td>
<td></td>
<td>Unit is ready and clustered</td>
</tr>
<tr>
<td>percona-cluster/1</td>
<td>active</td>
<td>idle</td>
<td>1</td>
<td>10.250.99.190</td>
<td>3306/tcp</td>
<td>Unit is ready</td>
</tr>
<tr>
<td>hacluster/0*</td>
<td>active</td>
<td>idle</td>
<td>1</td>
<td>10.250.99.190</td>
<td></td>
<td>Unit is ready and clustered</td>
</tr>
<tr>
<td>percona-cluster/2</td>
<td>active</td>
<td>idle</td>
<td>2</td>
<td>10.250.99.54</td>
<td>3306/tcp</td>
<td>Unit is ready</td>
</tr>
<tr>
<td>hacluster/1</td>
<td>active</td>
<td>idle</td>
<td></td>
<td>10.250.99.54</td>
<td></td>
<td>Unit is ready and clustered</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Machine</th>
<th>State</th>
<th>DNS</th>
<th>Inst id</th>
<th>Series</th>
<th>AZ</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>started</td>
<td>10.250.99.224</td>
<td>juju-9a0dbd-0</td>
<td>bionic</td>
<td>AZ</td>
<td>Running</td>
</tr>
<tr>
<td>1</td>
<td>started</td>
<td>10.250.99.190</td>
<td>juju-9a0dbd-1</td>
<td>bionic</td>
<td>AZ</td>
<td>Running</td>
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<td>3</td>
<td>started</td>
<td>10.250.99.132</td>
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</table>
3 – How we might help ...

Ubuntu SRUs, Debian DEP3 and Upstream Issues
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- Ubuntu Stable Release Update
- Debian DEP3
- Upstream Issues (forwarding)
4 – Inputs on how to help
Focus in QA? Follow daily branches in upstream as well?
Also (or Only) focus in production data? Crashes and Debugs from production?
Feedback ?

4 – Inputs on how to help
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THANK YOU!        QUESTIONS ?

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